WHAT IS MARKET RESEARCH?

Market research is a continuous process for gathering data on product characteristics, suppliers' capabilities and the business practices that surround them—plus the analysis of that data to make acquisition decisions. This requires one to collect and analyze information about the market that subsequently can be used to determine whether the need can be met by products or services available in the commercial market; whether commercial practices regarding customizing, modifying products or tailoring services are available to meet customer needs; what are the customary terms and conditions, including warranty, buyer financing, and discounts under which commercial sales are made; and whether the distribution and logistics support capabilities of potential suppliers are sufficient to meet the needs of the government.

Market research information can be used to shape the acquisition strategy, to determine the type and content of the product description or statement of work, to develop the support strategy, the terms and conditions included in the contract, and the evaluation factors used for source selection.

WHY DO MARKET RESEARCH?

Market research is essential to optimize the potential use of commercial items, commercial services, and nondevelopmental items to meet agency needs.

The DoD acquisition community has been challenged to reduce unique military requirements that result in unique processes within defense production facilities. Removal of these requirements will broaden the industrial base available to fill DoD requirements and allow historically defense oriented production facilities to expand and become competitive in the commercial market. The benefits of a globally competitive, national industrial base are not only reduced cost, but also reduced acquisition cycle times. We need to deliver new systems to warfighters within commercially available cycle times, which are much shorter than the average 12-to 18-year development cycle for a major DoD weapon system.

Access to the commercial marketplace will also provide access to the latest advances in technology. Military R&D no longer leads commercial in areas such as electronics. In the global marketplace, everyone has access to the same commercial technology base. In the future, part of the military advantage will belong to those who capture state-of-the-art technology, get it into weapons systems, and successfully field those systems first.

The preference for utilizing the commercial market applies to more than items and systems. To meet its budget and readiness goals, the Department of Defense is turning increasingly to the commercial market for services it needs, as well.

From a practical standpoint, we can achieve none of these mandates and goals without market research. Thorough market research provides the basis for

- identifying opportunities for using commercial items or services to meet defense needs,
- determining the availability of other existing items (nondevelopmental items) to meet defense requirements (see SD-2),
- writing product descriptions and statements of work which allow companies to offer their commercial items and services in consonance with commercial practice, and
- crafting acquisition strategies, solicitations, contracts, and support and test plans that accommodate and take advantage of commercial business practices and encourage commercial competition.

Use market research to shape:

- ✓ requirements
- ✓ product descriptions and statements of work
- ✓ support plans
- ✓ test plans
- ✓ sections L and M of the RFP
- ✓ contract terms and conditions

Not only does utilization of the commercial marketplace make sense from cost, schedule, and technology considerations, it is also required by law. The Federal Acquisition Streamlining Act of 1994 (FASA) requires that federal agencies to the extent practicable

- buy commercial items, commercial services, and nondevelopmental items to meet agency needs,
- require prime contractors and subcontractors at all levels to incorporate commercial and nondevelopmental items as components of systems they develop for federal agencies,
- state specifications in terms that enable and encourage companies to supply commercial and nondevelopmental items, and
- revise procurement policies, practices, and procedures—not required by law—to remove impediments to the acquisition of commercial items.

FASA also specifically requires federal agencies to conduct market research prior to developing new specifications for procurement and before soliciting bids or proposals for a contract which exceeds $100,000.

WHEN IS MARKET RESEARCH DONE?

Market research is done throughout the acquisition process, beginning with the mission needs statement. The level of specificity and scope varies at different points, but market research is a continuous process.

Market research, done early in the acquisition process, also provides information about commercial practices that you can use to shape the acquisition strategy, support and test plans, product description, statement of work, evaluation factors, and contract terms and conditions.

Early in the acquisition process, before the operational requirement document (ORD) is validated, for example, it is possible to compare the user's need to the capabilities of the commercial market and determine

- the availability of products to meet the requirement as is,
- the ability of suppliers to modify their products to meet the user's requirement, and
- the flexibility of users to modify their requirements to allow the purchase of commercial items, commercial services, or nondevelopmental items.

More thorough market research must be conducted later in the acquisition process to identify the correct set of performance characteristics for the product or service description (system specification, commercial item description, statement or work), the appropriate contract terms and conditions, and the commercial practices affecting the support strategy and the acquisition strategy in general. Figure 1 illustrates the ongoing market research areas during the acquisition process.

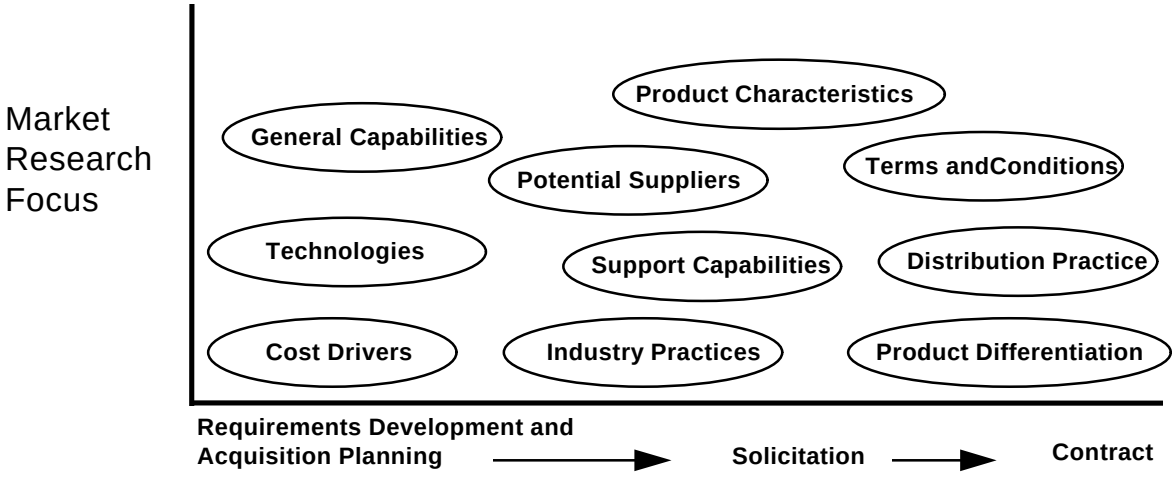


Figure 1: Iterative Market Research Activities

For system acquisitions, market research is iterative. If the initial market research leads to the conclusion that no existing system can meet the need, market research must continue throughout design to identify commercial and nondevelopmental items that can be integrated as subsystems, components, and support equipment even though the overall system is military-unique. DoD 5000.2 and FAR Part 11 instruct program managers and contracting officers to require contractors to incorporate commercial items as components of systems developed for the DoD.

Market research has two phases: market surveillance and market investigation. Market surveillance is an ongoing process and includes all the activities that acquisition personnel perform continuously to keep themselves abreast of technology and product developments in their areas of expertise. Market investigation, which involves more comprehensive research, is conducted in response to a specific materiel need or need for services.

PROCUREMENT INTEGRITY

The procurement integrity act (41USC423) prohibits personnel "participating personally and substantially" in a federal agency procurement from:

- soliciting or accepting jobs or business opportunities from...
- asking for or receiving things of value ($10 or more) from...
- disclosing bidder proposal information to...
- disclosing source selection information which has not already been made public to competing contractors.

Source selection information includes: bid prices in response to an IFB; proposed costs or prices in response to an RFP; source selection plans; technical evaluation plans; proposal evaluations; competitive range determinations; rankings of bids, proposals or competitors; and source selection panel reports.

Discussions between industry representatives and acquisition personnel which do not lead to the above prohibited activities are not just allowed, they are encouraged when the purpose is to gain a better understanding of the commercial market, including appropriate selection criteria. Personnel who are "participating personally and substantially"

- prepare or review specifications
- evaluate bids or proposals
- select sources
- conduct negotiations
- review and approve contract awards, modifications, or extensions.

Refer to FAR 3.104 for more details.

WHO SHOULD BE INVOLVED IN MARKET RESEARCH?

The military services and agencies do not have a specific group of people called market researchers; instead, a wide range of people are called upon to perform market research related to their area of expertise. Your participation may vary, depending on your organization and the types of items for which you are responsible. A team effort may be the best approach since many functional areas may need information gathered during market research.

Consider the factors which will affect the success of the entire acquisition when you identify who must have input to the market investigation. What information is needed to make the decision to buy from the commercial market? To prepare the product description you need to know the performance characteristics upon which products and services are valued and distinguished from one another. If an item needs follow-on support, such as spare parts and repair, you will need to know the characteristics of the follow-on support system. Is third party testing used? What business practices are standard? What practices are standard for the insertion of new technology? The market investigation lends itself to a team effort because of the many aspects which may be involved. The team may be composed of the following specialists as appropriate:

Technical specialist

Depending on the stage of the acquisition, and the type of acquisition this person may be the program manager, the technical specialist, or the project officer.

The program manager is responsible for defining and executing the acquisition strategy. He may join a market research team in the early stages of the acquisition as the materiel developer representative to better understand the analysis of alternatives and other market factors affecting the acquisition.

The technical specialist or project officer has overall responsibility for market research after concept exploration. That individual may be the person responsible for translating the requirement into a product description (commercial item description, statement of work, or specification). The technical specialist’s base of knowledge of the product and industry ensures that the item or service meets the identified need. Because he identifies the potential tradeoffs and product modifications that the users and the potential suppliers will consider, the technical specialist must be extremely conscious of the cost-quality tradeoff.

User

The user—the customer—must be satisfied with the item's performance. The user has two roles: to evaluate whether the potential product can operate in the environment in which it must function and to refine the requirement or identify techniques for mitigating performance risk as new information raises the possibility of tradeoffs.

Market research is also important to the user during the preparation of mission needs and operational requirements documents. Market research allows the user community, in conjunction with the technical community to identify risk acceptable or leading edge technologies for systems to provide "leap ahead" capabilities.

Logistics specialist

The team may need a member who is experienced in the support—spare parts, maintenance, warranties, and other support issues—for the potential commercial item. The logistics member can identify what information needs to come from the market investigation on the existing support system and the support-related aspects of the item.

Testing specialist

In a commercial item acquisition, the emphasis is on test and evaluation and past performance rather than on research and development. The test and evaluation specialist can provide insight into the validity and relevance of outside testing results and help specify the information which will be needed to address the criteria defined for operational testing.

Cost analyst

The cost analyst can assist by reviewing and comparing the affordability aspects of various alternative solutions to meeting a DoD requirement. The cost analyst may also need information related to price analysis.

Legal counsel

Legal counsel can determine if commercial business practices conflict with government contract law and assist in identifying appropriate documentation of market research findings and conclusions.

Contracting officer

The contracting officer can identify information on general business practices and contract terms and conditions that will be needed to successfully carry out the acquisition.

Market Research Shapes the Support Plan

When the Army Armament Research and Development Center was exploring the feasibility of replacing the M-21 Sniper Rifle with a commercial rifle, its original support plan called for operator maintenance of the firing pin and the extractor with his organic tools. The market research survey revealed that some candidate systems were not capable of having the extractor replaced by the operator. The requirement was relaxed to allow replacement by either the operator or unit armorer.

The Army also reduced the service life of the rifle from 15,000 rounds to 10,000 rounds based on the results of the market survey.

HOW IS MARKET RESEARCH DONE?

Think of market research as the sum of two interrelated processes: market surveillance and market investigation.

Market surveillance is the process of staying abreast of general industry practices and trends. Acquisition personnel performing market surveillance are not looking to fill any specific need. While market surveillance is general and ongoing, market investigation has a narrow focus and a specific time frame. Market investigation focuses on a defined requirement and results in a recommendation on whether or not commercial items or services can fill that need. The following sections discuss these two phases.

Market Surveillance

Market surveillance gives you the background and knowledge needed to carry out timely and thorough market investigations for specific acquisitions. When a new DoD requirement is identified, the military service or component must decide which of the following two propositions is valid:

- It is likely that the item or service is available from the commercial market or from other sources (NDI).
- It is highly unlikely that the item exists or that the service is available in the commercial market.

The DoD component defining the requirement also needs to know whether a commercial product or service would be available if the requirement were modified somewhat. Acquisition personnel must be able to say, for example, to the users: "If you can relax this part of your requirement statement, we can provide a commercial item to fill your need cheaper, better, and faster. Can you relax it?" Good tradeoff decisions are made possible by early user involvement and the information gathered during market research.

How do you become informed enough about the marketplace to be able to assist in these preliminary decisions? You rely on market surveillance to provide a general sense of the products and services available in the market and their characteristics and capabilities. Obviously, market surveillance is easier in some product or industry areas than for others. For example, it is easier to stay abreast of a stable market area than a very volatile one. The types of fork lifts, and their capabilities, for example, change far less rapidly than those of computers or other electronic gear. Either way, you must stay well informed about your segment of the market.

A good base for market surveillance is subscribing to, and regularly reading, trade journals for a specific market and maintaining active membership in professional societies. Personal contacts are another valuable source of information. Identify your counterparts in the other DoD components, federal agencies, and private industry. Exchange tips and information with those contacts. There are also companies that prepare commercially developed market surveys that provide information on a specific technology or commodity. For example, there is a yearly report identifying technology trend information for embedded computer products.

Other valuable contacts are the DoD users of your equipment. If your specialty area lends itself to dialogue with your users, they often can alert you to new products or new applications that meet their needs. The users, who have a vital interest in getting good equipment fast, frequently are very well informed. Government laboratories are also good sources for market surveillance information, especially in identifying technology trends and capabilities.

Industry representatives also can provide valuable information. Site visits to suppliers of products and discussions with other users can help you get a better feel for the realities of the industry than you can get by relying solely on advertising brochures and sales pitches. Such visits can help you gauge production prowess and capacity, which can be just as important to the Department as product characteristics. Industry shows, conferences, and

symposia in your product area are good sources of information. Talk to the supplier's representatives at these affairs.

Market surveillance resources are also available on-line. Automated data bases can provide a quick, cost effective way of keeping up with the published material in a field. Many data bases provide the full texts of articles covering a specific industry. For example, the Materials Business File contains information on technical and commercial developments in iron and steel, nonferrous metals, composites, and other materials. It covers more than 1,300 publications including some less common sources such as dissertations and conference proceedings.

You can search patent records on-line, as well as industry registers such as Dun & Bradstreet and the Thomas Register. Extensive indexes in these data bases allow the user to view information on a subject by entering keywords. Appendix A, "Computer-based Resources for Product and Service Information," suggests some data bases that may help you do market surveillance. While far from complete, it provides examples of the broad range of data bases currently available.

Also, check with your organization's library. They have the skill, experience, and resources to locate needed data and often have access to resources at other organizations through cooperative arrangements.

Surveying Commercial Buyers --Microcircuits

The Defense Supply Center Columbus (DSCC) conducted a survey of commercial companies who, like DSCC, buy microcircuits for application in a variety of systems. Survey questions addressed

significant technical characteristics,

inspection, qualification, and supplier audit practices,

types of specifications used for purchasing, and

requirements for documentation.

The survey helped DSCC gain a better understanding of the specific commercial practices related to buying microcircuits

Market Surveillance Shortens the Response Time

Situation

The "Tentage Team" is a multi-functional commodity business unit at the Defense Personnel Support Center (DPSC), Philadelphia, PA. The team was established in early 1995 to better respond to rapidly increasing demands for military tentage. Contingency operations in Desert Shield/Desert Storm had severely depleted US war reserve tentage stocks. Demands from hurricane Andrew along with other demands for urgent relief and deployment of troops in Somalia, Haitian refugee relief in Guantanamo Bay Cuba, and impending deployments to Bosnia threatened to completely drain stocks in spite of industry being near peak capacity for military specification replacements.

Response

Thanks to a strong market surveillance program and up-to-date data base of commercial capabilities, the tentage team was knowledgeable about industry suppliers, processes and materials. What needed to be determined were the characteristics of disaster relief which might allow DPSC and the user to relax some of the MilSpec requirements in order to obtain commercial sources to meet urgent needs (such as snow/wind capabilities, color, etc.). The tentage team met, identified these characteristics, and conducted necessary trade-offs to still meet most of the customer needs.

With the existing data base of capabilities, the tentage team was able to rapidly generate a one page performance specification for urgent relief requirements. This specification was sent to commercial sources and price quotes obtained for their commercial products the following day. Three contracts were awarded in order to meet delivery demands (one of the suppliers was also a new source for Defense Department business). The commercial tents met most of the MilSpec requirements at about one-half the price.

Lessons Learned

Their active market surveillance program and good data base of commercial capabilities allowed the tentage team to determine critical needs, tailor usual military requirements, develop a simplified one page performance specification, solicit and award multiple contracts all within five working days.

A key contribution to the success of the effort was teaming. The people making the decisions all worked together: Supply personnel had to determine the quantities needed (the customer had no idea how many people needed support as the numbers grew every day); technical personnel had to determine minimum requirements, industry capabilities, and trade-offs; and contracting had to put everything together in the contracts. Everyone had to be proactive, flexible and listen to suggestions from industry.

Finally, management had to be supportive to empowerment, and responsive to short fused status briefings with approvals and funding—often with limited data.

Market Investigation

When a need is defined, in many cases market surveillance is sufficient to determine whether a commercial product or service is available or not and little further investigation is needed. If, for example, a requirement is for a simple consumable item such as T-shirts, market surveillance is probably enough for you to say, "Yes, commercial items are available to meet this need." Perhaps a few phone calls to producers or visits to stores to determine the specific characteristics and practices related to what is available will be sufficient. However, for more complex acquisitions, further investigation is needed.

Structure your investigation to get only enough information to decide whether to proceed to a more detailed investigation of commercial possibilities.

For needs involving complex products or services or resulting in high-dollar acquisitions, a comprehensive market investigation is probably necessary. If market surveillance indicates that a commercial item or service might be available, a market investigation is initiated. It is not aimed at selecting sources to compete for a contract award; that takes place later in the acquisition process. Rather, the purpose of the market investigation is to determine, with a high degree of confidence, whether any products or services are available to satisfy the need (including support, standardization, and other considerations) or whether products or requirements can be modified or tailored accordingly. If the commercial market will be the source of supply, then further information on available products and related practices is also needed.

How Much Is Enough?

The scope, extent, and documentation of a market investigation depend on such factors as the anticipated dollar value of the item, its complexity, criticality, and the number of items needed. In the following subsections, we present a generic model of such a market investigation. The model provides enough detail to apply to complex, high value items, but not all parts are necessary for all acquisitions; the model should be tailored to the specific market information needs of your acquisition and the potential for commercial supply.

In addition to or instead of a market survey, consider the following ways to get information on market products and practices: (1) hold presolicitation conferences; (2) circulate draft product descriptions, statements of work, and requests for proposals; (3) conduct government/industry offsites. If, for example, time is short or the acquisition doesn't warrant a survey, you can at least make draft acquisition documents available to as many potentially interested companies as you can identify. Many buying activities are using the Internet for communicating and receiving comments on draft documents.

Communicating the Requirement to Industry

An important first step in conducting a market investigation is communicating the requirement to industry. This information must reach industry early in the process for two reasons. First, it allows vendors to identify potential commercial products or services that can meet the requirement. Second, early communication of the requirement as a draft or summary saves time in correcting or revising requirements later in the acquisition process and allows industry representatives to better prepare to answer questions asked during subsequent market research and analysis. Take care to communicate the requirement so that industry, especially commercial suppliers, can understand it. It is important to describe the operational environment; for example, it may differ from the commercial use environment. In the case of a reprocurement, it may be necessary to convert detailed specifications to performance and interface requirements before conducting the market investigation to allow the greatest opportunity for potential alternatives.

You may need to provide commercial firms, who haven't dealt with the government in the past, some general information on the unique aspects of government procurement, such as full and open competition, responsiveness, and the source selection process. You could present this information during a bidders conference or post it on the Internet.

MARKET RESEARCH USING PRODUCT SAMPLES

The Navy's Office of Safety and Survivability keeps abreast of all types of safety equipment. Its approach to commercial acquisition is an example of market research which combines market surveillance with user testing and some Navy laboratory testing instead of market surveys.

Safety office personnel have a variety of methods of identifying items. They read trade journals, attend trade shows, place notices in the Commerce Business Daily, and discuss equipment needs with users in the field. In brief, they are aware of drawbacks in current equipment and are always looking for new equipment that may resolve those problems.

After a potential item is identified, the Office of Safety and Survivability purchases a few copies and sends them to the field for a performance assessment. Some items are also tested at the office facility in Norfolk, Virginia. If the assessment is favorable, additional purchases are recommended.

This process works well for safety equipment, because most items are inexpensive and rarely need modification to work in a military environment. If minor modifications are required, suppliers are usually willing to make them in response to comments from users.

Safety office personnel also report good support by the commercial firms in terms of providing parts lists, training manuals, training videos, and "800" telephone numbers for ordering replacement parts.

SIX PARTS OF A MARKET INVESTIGATION

We have divided the market investigation into six parts: summary of market surveillance, identification of sources, survey of suppliers, checking of references (other users and buyers), evaluation, and documentation. Figure 2 graphically illustrates the market investigation process.

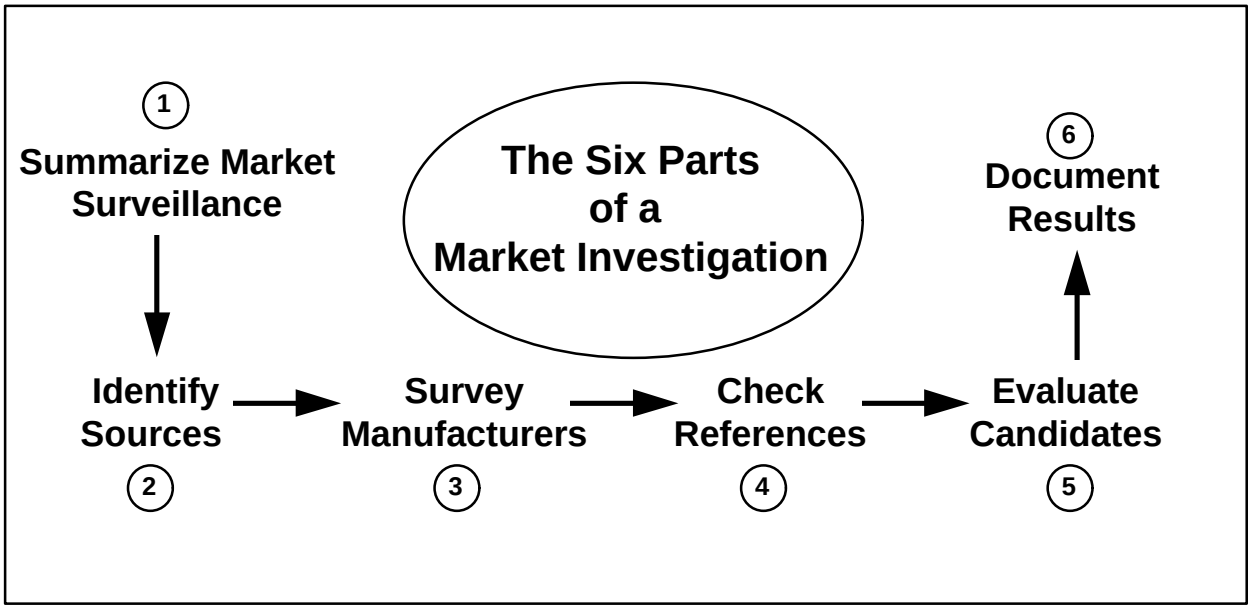


Figure 2. Parts of the Market Investigation Process

Summary of Surveillance

Part of the value of market surveillance is that you are better prepared to do an efficient market investigation in the limited time you have when faced with an acquisition. The first part of a market investigation is to review and summarize what you already know from your market surveillance. The market investigation can then be targeted to answer specific questions and to fill in gaps in information.

Identification of Sources

The market analyst must identify potential suppliers of acceptable commercial items or services. The potential sources will be asked to participate in a market survey and furnish information on their products or services. In some industries or for some items, everyone may know the suppliers and their products or services. In that case, little effort is required to generate a list of potential suppliers. Other, more diverse industries require considerable effort to identify sources of acceptable products.

Adding new potential sources to a list of suppliers increases competition, which can lead to better products at lower costs for the Department of Defense. In some cases, yours may be the first attempt to meet the requirement with a commercial item, and more effort may be required to identify as many potential sources as possible. You may need new techniques to reach sources that have not previously dealt with the government.

The list of sources starts with information available from market surveillance. Known suppliers of items and those who have bid on contracts in the past constitute a basic list. For certain products, the General Services Administration (GSA) Schedule will identify sources. Announcements of "Sources Sought" or "Request for Information" in the *Commerce Business Daily* often produce a good response. More importantly, to identify new sources or reach suppliers that have not previously bid on defense contracts try advertising on electronic bulletin boards, the Internet, through trade associations, or in trade publications, which are used by commercial firms in seeking new business. Almost every industry has some established structure for allowing buyers and sellers to find each other. Advertise where the commercial buyers do.

Automation Tip

Automated data bases can help generate a list of potential suppliers. Data bases containing information on government contract awards can identify past suppliers and those that have contracted with other DoD activities or other government agencies. Data bases covering commercial products and suppliers may specialize in one industry or may include products from many industries. Dun & Bradstreet offers the *Electronic Yellow Pages*, a list of companies referenced by name and address that provides a brief description of products offered. *Thomas Register of American Manufacturers* is also available on-line. Several data base products are based on the information contained in the federal catalog system. Those data bases relate part numbers and national stock numbers (NSNs) to sources. Similar catalog data bases covering commercial products are also available. Appendix A provides more information on the data bases mentioned above.

Survey of Suppliers

The survey of suppliers may consist of a few telephone calls, or it may be a comprehensive questionnaire sent to a group of potential suppliers, or it may involve the evaluation of product samples. If you decide to use a mail survey, a cover letter or introduction explaining the survey goals and the expected size of the acquisition and a follow-up contact may increase the response rate. Personal contact is best because it provides an opportunity to answer any questions about the survey. The follow-up step is particularly important for encouraging suppliers who have not participated in defense work to respond.

After receipt of the information, it is important to analyze the data to determine whether the information received is sufficient to determine whether the product or service meet the needs of the requirement. It is not uncommon to get incomplete or erroneous data from suppliers. In some cases, you may need to contact an applications, field service, or design engineer for clarification of issues. You may need to appraise the survey information using market surveillance information, analyzing market trends to fill in missing data. For example, you can estimate an end of production date for a product for which you have no data by analyzing comparable products for which data exists and is available.

If a written survey is overly burdensome, many suppliers will not respond. Be careful to request the minimum amount of information you need to make your acquisition decision. The following types of information may be needed depending on the acquisition:

✓ Product data

Take a look—*at Appendix B*.
It contains a more detailed listing of information you may want to get during a market investigation.

Product data is information describing the range of products in the market that may meet the DoD requirement. For example, information on the performance and interface characteristics of products in the market; applicable regulatory commercial, and "de-facto" standards; open system definitions; product differentiating factors; cost driving factors. Product information may be samples, test results, product literature, etc. The most useful product literature includes documents such as product data sheets, independent test reports, and product instructions -- not advertising brochures.

✓ Supplier capability

Supplier capability includes the number of suppliers in the market and production capacity. For some items, questions about the producer's capability to meet surge and mobilization demands need to be included.

✓ Market acceptance data

Market acceptance data includes information on annual sales, product maturity, returns on warranty, and other acceptance data related to whether the product meets the government's needs.

✓ Support data

Support data is information on product support records and experience and the existing support system. Suppliers can provide information on warranties, repair histories, or their policies and procedures on repair and replacement. Questions on how the supplier supports or upgrades discontinued models, when particular products will no longer be produced or supported, and how upgrades are provided in general are also appropriate.

✓ Test data

Suppliers may be able to provide test data from their own laboratories or from private laboratories. This data can be used to validate suppliers' claims regarding product performance. In some instances, test data can eliminate or reduce the need for further testing. For some products or services, information on regulatory or third party testing or certification (FAA, UL) may be requested.

✓ Business practices

Business practices is information on standard commercial contract terms and conditions and financing arrangements gathered to carry out a commercial acquisition using FAR Part 12 direction. It also includes information on factors affecting how products are sold or distributed in the market.

Take a look— *at* GSA's data base of typical contract terms and conditions for various industries. It's on-line at: http://www.arnet.gov/References/fssciate.html.

✓ References and validation data

One of the most important pieces of information is a list of those currently using the product. After the information gathering part of the market investigation is done, the references are used to verify the information submitted by the supplier and to get other users' views on how the item performs or on the quality of the service provided.

Checking of References (Current Users)

The goal of this part of the market investigation is to determine the actual performance of an item or service. In its response to the supplier's survey, the supplier should provide names of current customers. Because market investigation is not a source-selection process, it is not necessary to examine every product that potentially meets the requirement. A sample of representative products or suppliers may be adequate. The goal is to verify whether a product or service performs as described in information gathered during the earlier part of the investigation. Also consider reviewing information on past performance and product quality from reliable sources like government data bases, consumer protection organizations, or user groups.

This part of market investigation may require funding, especially if you have to make on site visits to commercial establishments. However, a market investigation is considerably less costly than building prototypes and conducting the extensive testing required during a full-scale development or buying products that turn out, after delivery, not to meet users' needs.

Depending on the type of items required, several approaches can be taken to verify the supplier's claims about an item. You can test product samples. Personnel in the field can use or examine a sample. When it is feasible to do so, they should test the item in the environment and in the way that it will be used in the field to determine whether it meets performance claims and operates satisfactorily. The military service or component may wish to rotate the equipment through several units to get feedback from a number of people. Alternatively, personnel may be brought to the site of equipment that cannot be easily transferred.

Another approach is to interview current users of the item or service. Acquiring items–by lease, charter, loan, or purchase–to test in the field is not always feasible. As an alternative, the customers identified in the supplier's response to the survey can be interviewed for information on actual performance. Some items or services can be verified by telephone calls to current users. An on-site inspection is another possibility.

Private sector users are often willing to discuss good and bad features of products or services. DoD experts can question their private sector counterparts to get additional technical knowledge and to make an informed judgment on whether it meets DoD's need. For example, the logistics representative on the team could interview maintenance personnel who have experience with the item to determine their maintenance philosophy, how much maintenance is needed, whether parts are easy to replace, etc. Combining approaches may also work.

MARKET RESEARCH SHAPES THE REQUIREMENT

Situation

The Army conducted a market investigation to determine the feasibility of buying a commercial tugboat for harbor and inland towing. Since the tugboat is a complex system that has a high dollar value, they performed an extensive investigation. A major part of the market investigation for the tugboat was an on-site inspection of four of the candidate tugboats, which were in commercial operation. The four tugboats were representative of the nine candidates, and the Army selected them because all were in the same geographic area and could be visited in a week. The Army team prepared a list of questions pertaining to each vessel and spent a day on each tugboat questioning the captain and the crew members.

Tradeoffs

During this part of the market investigation, the Army team performed several tradeoff analyses. It identified four areas in which the requirement would need to be revised if a commercial item acquisition was chosen. The team performed an analysis for each of the following areas:

- ***Crew Accommodations**—None of the candidate tugboats could provide crew space complying with 46 CFR 92.2020 requirements for individual crew member space. Either the requirement would have to be waived for a full crew of nine or the crew size would have to be reduced to eight.*
- ***Length**—The original requirement specified a length of 75 feet. Storage and crew requirements would be difficult to meet at 75 feet, but extending the length requirement to 79 feet would provide adequate space.*
- ***Speed**—The original requirement called for a light delivery speed of 12 knots, but none of the candidates could meet that requirement under any load conditions. A light speed of 11 knots was judged to be the maximum feasible.*
- ***Draft/Range**—The original requirement called for a maximum draft of 8 feet. The survey team analyzed the relationship between draft and range and stated that the full cruising range and the additional equipment items desired could be accommodated with a maximum loaded draft of 8.5 feet.*

Conclusions

In addition to doing the tradeoff analyses, the Army team identified several pieces of state-of-the-art equipment and determined that they could be accommodated by the candidate tugboats. The team recommended that a commercial acquisition be approved and provided a list of the changes needed in the original requirements document

Evaluation

Working with Industry: Establishing a Forum for Market Research

The Defense Personnel Support Center (DPSC), Directorate of Clothing & Textiles, uses its Technology Modernization Committees and an annual conference to do market research. The committees, chaired by industry with DPSC representation, specialize in product areas like shirts, tents, footwear, and life support items. DPSC uses the committees to exchange ideas, to stay abreast of new technology, and to coordinate draft item descriptions. This approach works well in an industry characterized by many small companies and highly customized products.

The fifth part of a market investigation is to evaluate all the information acquired during the investigation and determine whether a commercial acquisition is feasible. The result may be a determination that it is not feasible; that commercial products or services meet the need as stated; that commercial products or services can meet the need if certain requirements in the original statement are relaxed; or that commercial products or services could be modified to meet the requirement.

For example, when the results of a market investigation are compiled, the candidate products may meet the requirements in varying degrees. Or it may be that no candidate meets a particular requirement, but they all meet all the other requirements quite well. In these situations, it is very useful to have an individual who is responsible for the operational requirement on the market investigation team. You may avoid reducing the candidate field or eliminating a commercial solution by relaxing or deleting the problem requirement if in the judgment of the user that is a reasonable thing to do.

If the user is unwilling to relax or eliminate a particular requirement, then ask the candidates about the feasibility and cost of modifying their product to meet the requirement. For some products, suppliers routinely modify their products for their commercial customers. Another possibility is that the candidates will see that the modification would be commercially marketable and be willing to make the modification in anticipation of a return from the commercial market.

These kinds of trade-off analyses are important tools in establishing a candidate field that presents the overall best choices. In some cases it may be economically feasible to develop techniques that mitigate the risk of using commercial items that do not fully meet the requirement. For example, a commercial alternative may not satisfy a particular reliability requirement (e.g., 300 hours mean time between failures). However, a trade-off analysis might demonstrate that the reliability shortfall could be compensated for by other equipment capabilities or performance. Or, if there were sufficient cost savings per unit, redundancy or a dispose-and-replace policy might compensate for the shortfall. Likewise, use similar analysis to evaluate producers' processes, production methods, and production control procedures. It is usually better to accept or tailor these rather than to impose totally new procedures that will drive up risk and cost.

Modifying a product can increase program risk, because modification of a commercial item may result in a partial development effort. Many of the cost, risk, schedule, and supportability benefits of buying a commercial

item may be jeopardized as a result of modification. The test and logistics support plans must take the scope of the modification into account to ensure the success of the effort. Evaluate the total effect of modifications, particularly in the area of logistics support. For example, a vendor may not recognize or support the resulting redesigned item and the Department of Defense may have little or no organic support capability for it.

In addition, sometimes additional engineering effort is required to fully evaluate products identified as potential candidates during market investigation. Environmental or conformance tests may be needed to determine whether the product meets particular aspects of the requirement or site visits may be needed to determine if the supplier can provide a consistent product or service.

Documentation

The documentation of the results of the market investigation is a critical aspect of the process. FAR Part 10 states that agencies "should document the results of market research in a manner appropriate to the size and complexity of the acquisition." The results should also be documented in a manner appropriate to how they might be used in the future. That is, the type and amount of information you keep should in part be based on how you expect it will be used in the future.

Documentation serves several purposes. First, it provides a historical record of the market research effort and provides evidence that proper market research was done for the acquisition. Second, it may be used in the future by other market research teams investigating similar products to get a feel for what might be available and to get ideas on where to start their investigation. Third, it may be used by the contracting office working on the solicitation for your acquisition to further determine appropriate contract terms and conditions.

Early market research must also be documented in the Operational Requirements Document. DoD 5000.2-R requires the evaluation of requirements based on the potential of the commercial market to meet the user's need. This evaluation addresses how the desired performance requirements could reasonably be modified to facilitate the use of the commercial market. The results of the evaluation must be included as part of the initial Operational Requirements Document.

Consider documenting information such as the companies contacted, the questions they were asked, a summary of the information provided, test results, and your evaluation of their products or services. The graphic on the following page gives a sample of this type of documentation.

The Army Sniper Rifle—Performance Characteristics

Candidates	System Life (rounds)	Magazine (rounds)	Recoil (ft-lbs)	Collapsed Size (inches)	Accuracy (P_h)	Body Armor Penetration Range (meters)
Requirement	10,000 min	5 min	22 max	46 max	.85 min	800 min
Supplier A	10,000	11	26.0	12.3	.88	800
Supplier B	5,000	5	11.9	15.2	.86	750
Supplier C	5,000	10	9.5	13.5	.85	620
Supplier D	12,000	10	10.5	8.0	.94	860
Supplier E	5,000	10	12.9	14.7	.86	550
Supplier F	5,000	15	10.0	28.8	.89	800
Supplier G	9,000	10	18.7	14.9	.87	900
Supplier H	7,000	20	8.9	10.4	.85	925
Supplier I	8,000	5	12.0	8.1	.85	800
Supplier J	10,000	10	11.5	15.8	.91	800
Supplier K	6,000	5	15.6	12.5	.86	900
Supplier L	8,000	20	7.4	12.3	.94	850
Supplier M	11,000	15	16.4	9.8	.93	950

Market Research Shapes the Test Plan

Under SECDEF orders to expedite the installation of global positioning system (GPS) instrumentation in military aircraft, the NAVSTAR GPS Joint Program Office surveyed the commercial market to determine the possibility of purchasing commercial GPS receivers. From the survey, the program office determined that commercial receivers met the majority of user requirements. The exception was the military unique threshold for electromagnetic interference (EMI). Commercial receivers had not been tested for EMI; their ability to meet the requirement was unknown. The program office acquisition strategy, which combined product demonstrations to show compliance with the other minimum requirements and Government EMI testing, resulted in the acquisition of an unmodified commercial item The first shipment of 1,672 receivers was delivered 6 months after the SECDEF directive.

MARKET RESEARCH FOR SERVICES

Services require the time and effort of a contractor whose primary purpose is to perform an identifiable task rather than to furnish an end item. Generally, market research for services should provide information on practices used in buying the same or similar services in the commercial market, the identification of potential service providers, and an understanding of the range of capabilities available for the performance of the service sought. Your market investigation should include communication with other users of the service, including those persons involved in service acquisition and administration, as well as the providers of the service needed.

A major difference between market research for services and for products is found in how to determine the quality of what you intend to buy. For services, the determination is more subjective and less precise and requires a different approach to the types of information obtained. For example, past performance is always important, but for services it is paramount. The best indication of the quality of services a contractor will provide is the quality of services that have been provided in the past. You should obtain information about the past efforts that are related to the kind of services you need. Ask potential contractors to supply the following information on past contracts:

- Title and objective of effort
- Contracting agency
- Time period of effort
- Value of contract
- Type of contract (fixed price, cost reimbursement)
- Accomplishments of effort
- Point of contact at the organization receiving the services (to include address and telephone number)

Many service sectors have developed their own standards to which they voluntarily adhere or are governed by regulatory standards. These standards describe the minimum performance you can expect. So if the standard meets your requirement, you can be reasonably confident that a number of companies can provide the needed services. The standard will also provide acceptable quality levels, if they exist. An acceptable quality level establishes the maximum allowable error rate or variation from the standard. For example, a standard for maintenance services may require

that a particular maintenance action be completed in four hours, with an acceptable quality level of five percent. That is, the service may take more than four hours only five percent of the time. This is important because, unlike products, services can rarely be delivered 100 percent to standard.

The typical costs of services should also be a topic of the market investigation, including the costs of differing acceptable quality levels. As with products, costs can vary considerably depending on the level of quality you need. The cost of a two percent error rate should be greater than the cost of a ten percent error rate.

Consider answering the following types of questions during your market investigation:

- How are services segmented or packaged commercially?
- Which services must be provided locally—which can be provided off-site?
- What factors are used to evaluate service providers?
- What kinds of performance incentives are used?
- What is the normal length of contract?
- Who owns and furnishes needed equipment and supplies?
- What are the qualifications of the people who are providing services?

Types of Services

✓ Maintenance, overhaul, or modification of supplies, systems or equipment
✓ Routine recurring maintenance of real property
✓ Housekeeping and base services
✓ Advisory and assistance (consulting) services
✓ Operation of government-owned equipment, facilities, and systems
✓ Communication services
✓ Architect or engineering services
✓ Transportation services
✓ Research and development

Market Research for Services—Joint Industry/Government Offsite Meetings

In September 1995, Congress acted to close Kelly AFB. This event gave San Antonio Air Logistics Center (SA-ALC) an opportunity to competitively realign its maintenance workloads. Successfully contracting for complex aircraft, engine, and electronic test equipment maintenance worth nearly $1 billion annually might have been an impossible task had it not been for extensive industry and potential bidder participation. In February 1996, SA-ALC's Request For Proposal Support Office, with the Kelly AFB Propulsion Business Area, held an 8 day in-residence joint industry/government offsite meeting at Bergstrom AFB, a base being closed.

The offsite had 5 purposes:

- *Grasp the advantages of commercial practices and learn how to incorporate them into the Air Force's streamlined acquisition process.*
- *Understand the needs, expectations, and capabilities of likely players.*
- *Identify the government's long-lead actions for developing a Request For Proposal (RFP), adequately defining the workload, and evaluating the responses.*
- *Derive the "up front" benefits from industry expertise in transition, commercial contracting, and cost reduction.*
- *Assure successful realignment of the workload while maintaining readiness.*

The meeting brought contracting and technical experts from industry and government together, gave them background briefings by subject matter experts, and initiated group discussions. This interchange of ideas brought consensus on many of the issues. Attendees took back to their organizations a group-generated briefing discussing the offsite and its results, a jointly performed risk analysis, a draft statement of objectives and evaluation criteria, an outline of a "commercial-like" solicitation, and a plan for resolving joint industry/government issues. (Meetings of this type must comply with the requirements of the Federal Advisory Committee Act (FACA) 5 USC App 2, Sec 1-15.)

Lessons learned:

- *Limiting participation to only 20 attendees at any given time created effective group dynamics.*
- *A Commerce Business Daily announcement requested resumes of companies wishing to attend; the Air Force invited the 9 most representative companies.*
- *The government placed the results of the offsite on the World Wide Web.*
- *The spartan environment minimized distractions.*
- *Significant interchange occurred between attendees even outside the formal meetings.*

- *A read-ahead package of background information prepared attendees for a rapid start.*
- *Rules of Engagement stressed the importance of speaking openly and freely.*
- *Professional facilitators kept the discussion on track and productive.*
- *Computer "groupware" recorded progress and permitted "anonymous" input.*
- *E-mail groups and Web posts kept all parties up to date, even after the meeting.*

The Air Force learned more about commercial practices, industry capabilities, and ways to more clearly explain government requirements. The open interchange and continuous dialogue has shortened the draft RFP cycle and increased the quality of the solicitation and program.

PRINCIPLES

In discussing market research, we have described a general process that can be adapted to a wide range of items, services, and organizational structures. Underlying the process are six principles that need to be kept in mind when adapting it:

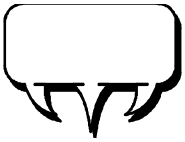
Start early

Begin market research early, while the requirement is still flexible. In a milestone process, begin market research prior to Milestone 0, while the mission need is being defined and in support of the operational requirement document. Additional research will be performed later to identify subsystems or components during design of development programs and to get more specific details related to technical characteristics and related market practices.

Involve users

Involve users in the market research process, not merely in defining the requirement. Users can be active participants in the market research for some items and services or testers for others. Try to involve users formally in working groups, but also maintain informal lines of communication between them and the market analysts. Users in the field have access to new technology and new product information that needs to be conveyed to those who define requirements. Users also play a major role in identifying problems with the current equipment or service.

Communicate

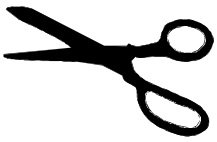


Good communication across functional areas and with industry and users is important to the success of a market investigation. For this reason an extensive market investigation may work best as a team effort. The effect of linking each member's prior experience and area of expertise with the information gathered will guarantee more balanced, "best-value" decisions. In communicating with industry, consider the use of some different forums than those you've used in the past to ensure you are communicating with commercial companies – in addition to those that have traditionally dealt in the government market.

Think of market research as an iterative process

Successful market research is an iterative process. Market research is first used to determine the availability of commercial capabilities, practices, items, and services to meet the general requirement. It must also be done later to identify commercial components available for incorporation into systems developed for DoD and to get more specific, detailed information to make various acquisition decisions.

Tailor the investigation



The amount of time and money spent on market research should be related to factors such as the value of the acquisition, the complexity of the item or service, the use of the item or service, and the commercial potential. If market surveillance information tells you there is little potential for commercial use, further market research should be minimal. If commercial potential is high, an extensive market investigation may be called for.

Refine as you proceed

The research should always proceed from the general to the specific. Acquire a little bit of information on many producers and products and a lot of information on the few products that seem likely to meet the requirement. The market research should be structured to acquire only enough information to decide whether to proceed to a more detailed examination of commercial possibilities.

Market Research Shapes the Acquisition

Situation

The near term digital radio program took a different approach to acquiring the latest technology in data communications for the Army. In November 1994 the PEO and PM were tasked to determine the "best" industry could offer in supplying the Army with a new communications system based upon a performance specification and full and open competition. To meet the delivery dates, the proposed system had to be "state of the shelf" with an open architecture to support future growth.

Response

Industry was involved early in the process. Manufacturers were given an executive summary with draft performance specifications in January 1995. Face to face discussions with all interested bidders, which took place before release of the draft RFP (March 95), were conducted to determine what industry was capable of providing. Extensive use of an electronic bulletin board enabled faster dissemination of information and allowed frequent and open dialogue with interested suppliers. A performance specification that specified only minimum requirements allowed use of latest technology. A technical demonstration was part of the evaluation process.

As a result of the market research, several changes were made to the acquisition. They included a reduction in environmental testing, added modeling and simulation, added technical features, a cost plus incentive fee added to the RFP for certain engineering efforts, and a reduced high capacity throughput (to be in line with industry standards).

Communication with industry shaped the specification and RFP. The end result is an Army radio with throughput performance twice that required by the performance specification. The radio was obtained for about one-fourth the cost of a new development. It contains about 95% commercial-off-the-shelf software. The entire process, from receipt of the mission to award of the contract, took fourteen months.

Lessons learned:

- *Ensure performance specifications include a clear understanding of the intended use and operational environment.*
- *Involve industry early to get a realistic assessment of what they can accomplish.*
- *Maximize the use of face-to-face discussions.*
- *Use competition to provide leverage.*